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ABSTRACT

As with any new theory, it is necessary to validate the basic construct of vocational maturity. Once this is done, instruments to measure vocational maturity, or decision making, can be evaluated. With this as an objective, this paper discusses some of the problems associated with measuring vocational maturity, such as identifying variables, methods of data collection, and item selection procedures. The selection and definition of related vocational maturity variables is complicated by the lack of a well-defined taxonomy. Choice of methodology is difficulty, since three approaches have been used in previous data gathering--the partially structured interview, the structured interview, and fixed alternative questions. The paper also examines the basic assumptions regarding vocational maturity as well as validation by internal and external evidence. Validation by internal evidence is discussed in terms of the four dimensions of Crites' model: (1) Consistency of Vocational Choice, (2) Wisdom of Vocational Choice, (3) Vocational Choice Competencies, and (4) Vocational Choice Attitudes. Validation by external evidence presents problems in that the existing data regarding external evidence is somewhat limited at the present time. (JS)

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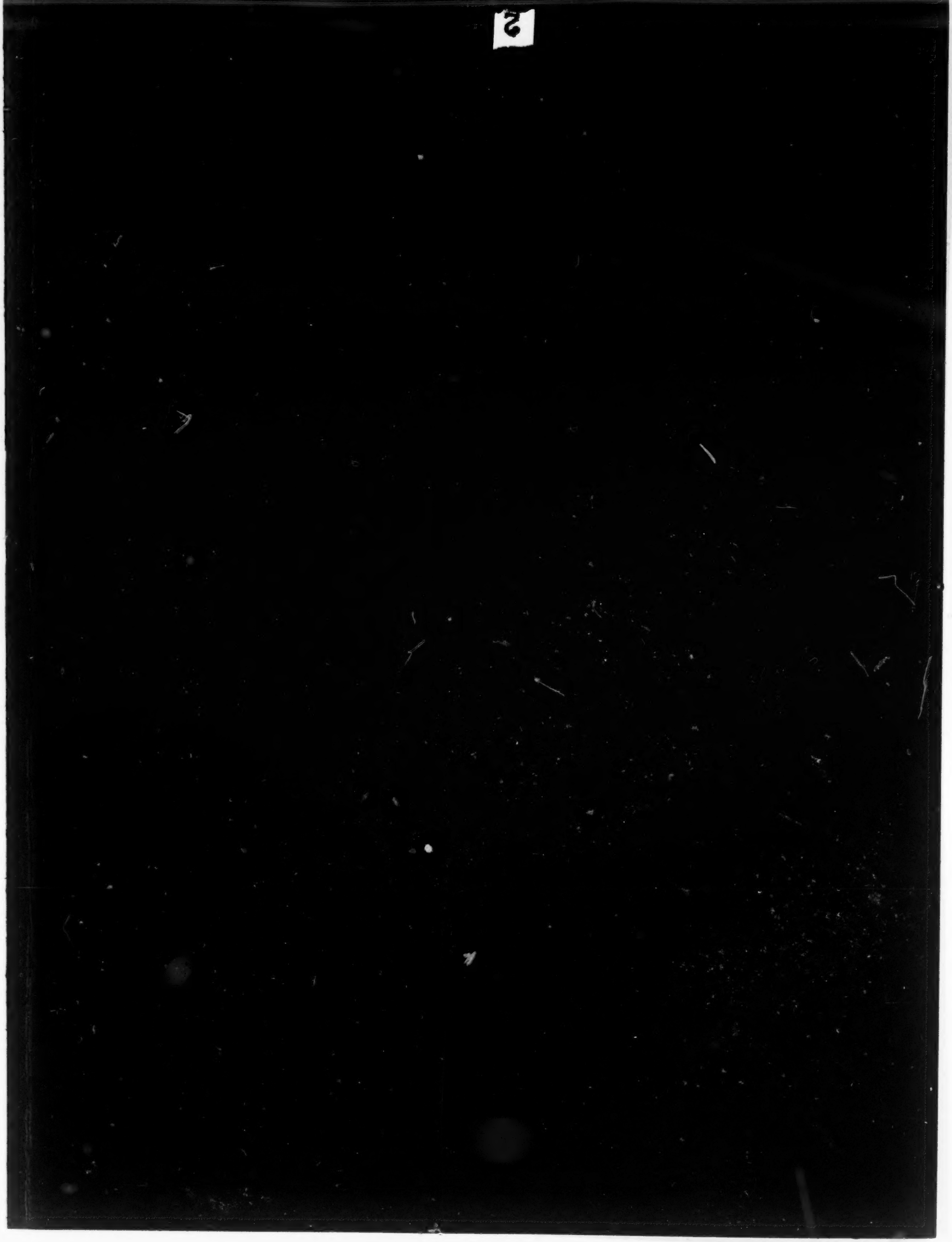

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TOWARD THE VALIDATION OF THE CONSTRUCT OF VOCATIONAL MATURITY

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PREFACE

Most youth who want to be firemen or jet pilots or nurses when they grow up never attain these occupational goals. The physical or emotional capacities of some prevent their realizing these ambitions; but more often the goals are changed long before the time comes to begin earning a living, and a different occupation becomes more important. There is no single vocational decision in life. Rather, there are a number of reversals and modifications of thinking over the time leading up to a decision concerning a career or life work.

Vocational maturity is a recently developed--in fact, still developing--theory concerning vocational decision-making. In order to examine the test measures of vocational maturity, one must first have available a solid construct of vocational maturity itself. This paper presents a step toward the validation of such a construct.

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John K. Coster
Director

SUMMARY

Although several indices have been introduced to describe vocational maturity, sound evidence concerning the validity of the construct itself is not yet available. This paper presents some of the major problems that must be considered in any attempt to develop measures of vocational maturity. Problems and suggestions are discussed for providing internal and external evidence of validity. It is hoped that this discussion will provide other investigators with insight into the theoretical and practical considerations that are necessary in the validation of the construct of vocational maturity.

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Introduction

From the turn of the century until the 1950's, vocational choice was viewed primarily as a point-in-time event in which the assessed characteristics of individuals were matched with the human requirements of occupations (Parsons, 1909; Paterson and Darley, 1936; Williamson, 1939; Dvorak, 1947). More recent theories of vocational development propose, however, that vocational choice is a process that takes place throughout the period of adolescence, during which time the individual makes not one but a series of related decisions that culminate in a chosen occupation (Dysinger, 1950; Ginzberg, Ginsburg, Axelrad, and Herma, 1951; Super, 1953). Consistent with this emphasis upon the longitudinal nature of vocational decision-making is the concept of vocational maturity which has been introduced to describe the various behavior dimensions along with vocational development proceeds (Super, 1955).

Vocational maturity consists of a set of dimensions which may be common traits of American males in the exploratory stage of vocational development. These are "qualitative categories of vocational behavior within which there are quantitative variations associated with age" (Super, 1957, p. 59). Presumably it should be possible to construct measures of the following dimensions of vocational maturity: Orientation to Vocational Choice, Information and Planning About the Preferred Occupation, Consistency of Vocational Preference, Crystallization of Traits, and Wisdom of Vocational Preferences. If valid measures of these dimensions can be constructed, it may eventually be possible to graph an individual's vocational maturity profile (Super, 1955) in such a way

as to indicate both his degree and rate of vocational development (Crites, 1961) along each dimension. Although some progress in measuring the construct of vocational maturity has been made by Super, et al., (1960, 1967), Gribbons and Lohnes (1968), and Crites (1965), more research remains to be conducted in order to establish the empirical foundation of vocational maturity. In this paper some of the major problems that must be considered in any attempt to validate the construct of vocational maturity are discussed, and suggestions for providing internal and external evidence of validity are presented.

Vocational Maturity: Assumptions

The construct of vocational maturity apparently is based on at least three major assumptions. First, it is a multidimensional construct rather than one unitary trait (Super, et al., 1957). For example, Super and Overstreet (1960) hypothesize that 20 indices grouped under five dimensions would account for the construct of vocational maturity. Four dimensions and 18 variables are considered by Crites (1965) to represent the construct of vocational maturity.

Second, the construct of vocational maturity consists of both cognitive processes and attitudinal variables (Super, et al., 1963). Behaviors which may be classified as cognitive processes include assimilating information about self and reality, resolving conflicts between alternative courses of action, establishing future goals, and relating means to ends through planning (Crites, 1965). Attitudinal variables include involvement in the choice process, orientation toward work, independence in decision-making, preference for choice factors, and conceptions of the choice process (Crites, 1965).

Third, the behaviors designated by the vocational maturity construct are developmental behaviors. Therefore, mean scores on vocational maturity measures should increase concomitantly with age and grade level of students.

These assumptions might serve as the bases for generating hypotheses which, if sustained, would tend to validate with empirical data the construct of vocational maturity. Their corroboration would uphold the internal structure of the model but would reveal very little about its validity in terms of its relation to significant vocational behaviors.

Problems in Validating the Construct of Vocational Maturity

Several problems arise when one considers designing studies to validate the construct of vocational maturity. One is the choice and definition of the specific variables which will be regarded as representing the construct. Another is the choice of observation methods which will yield valid and reliable data on the vocational maturity variables. A final problem pertains to the item selection procedures to be used in producing theoretically and empirically valid measures of vocational maturity.

Vocational Maturity Variables

The selection and definition of a proper set of vocational maturity variables is fundamental to the validation of the construct. If one wishes to develop instruments intended for the measurement of the construct of vocational maturity, he must consider not only what variables are to be included but also how the variables can be clearly defined for purposes of item construction. The problem of variable selection and

definition arises because of the fact that a well-defined taxonomy of the construct of vocational maturity does not exist. In fact, even though the concept of vocational maturity was introduced more than 15 years ago, researchers are still seeking its parameters. The preliminary work of the Career Pattern Study (Super and Overstreet, 1960, p. 33) suggested the five dimensions and 20 indices of vocational maturity shown in Table 1. However, on the basis of data collected on a sample of ninth-grade boys, Super and Overstreet concluded that only six of the 20 indices "had a sufficient number of statistically significant positive intercorrelations to be considered adequate as measures of vocational maturity at the ninth-grade level" (Super and Overstreet, 1960, p. 143). The following indices were considered adequate measures of vocational maturity: (1) Concern with choice, (2) Acceptance of responsibility for choice and planning, (3) Specificity of information about the preferred occupation, (4) Specificity of planning for the preferred occupation, (5) Extent of planning activity, and (6) Use of resources in orientation.

Table 1. Dimensions and Indices of Vocational Maturity (Super and Overstreet, 1960)

Dimension	I.	Orientation to Vocational Choice
		a. Concern with choice
		b. Use of resources in orientation
Dimension	II.	Information and Planning About the Preferred Occupation
		a. Specificity of information about the preferred occupation
		b. Specificity of planning for the preferred occupation
		c. Extent of planning activity

Table 1 (continued)

Dimension III.	Consistency of Vocational Preferences
	a. Consistency of vocational preferences within fields
	b. Consistency of vocational preferences within levels
	c. Consistency of vocational preferences within families
Dimension IV.	Crystallization of Traits
	a. Degree of patterning of measured interests
	b. Interest maturity
	c. Liking for work
	d. Degree of patterning of work values
	e. Extent of discussion of rewards of work
	f. Acceptance of responsibility for choice and planning
	g. Vocational independence
Dimension V.	Wisdom of Vocational Preferences
	a. Agreement between ability and preferences
	b. Agreement between measured interests and preference
	c. Agreement between measured interests and fantasy preference
	d. Agreement between occupational level of measured interests and level of preference
	e. Socioeconomic accessibility of preference

In a later publication Super, et al. (1963) suggested that vocational maturity in the crystallization stage consists of the following 11 attributes and behaviors: (1) Awareness of the need to crystallize, (2) Use of resources, (3) Awareness of factors to consider, (4) Awareness

of contingencies which may affect goals, (5) Differentiation of interests and values, (6) Awareness of present-future relationships, (7) Formulation of a generalized preference, (8) Consistency of preference, (9) Possession of information concerning the preferred occupation, (10) Planning for the preferred occupation, and (11) Wisdom of the vocational preference.

Some notable differences exist between the concept of vocational maturity suggested in the 1960 monograph (Super and Overstreet, 1960) and the new formulation which Super presented in 1963 (Super, et al., 1963). In the new formulation, indices are not grouped under dimensions of vocational maturity as they originally were conceptualized; they are simply listed as 11 "behavior-continua and facilitating attitudes and attributes" (Super, et al., 1963, p. 84). Instead of settling on the 20 indices which were originally tried out in the Career Pattern Study or adopting the six indices which were considered to be empirically valid, Super's newer formulation proposes 11 indices, some of which were not statistically valid vocational maturity indices for the ninth grade. Super provides suggestive rather than exhaustive or conclusive definitions of the 11 indices. The researcher attempting to construct measures of vocational maturity must define the variables explicitly if he wishes to write items to measure the various indices.

In an attempt to organize the various hypothesized indices of vocational maturity, Crites (1965) suggested that the diagram shown in Figure 1 might represent the construct of vocational maturity as derived from theories of vocational development. The variables and dimensions included in the Crites model are similar to those suggested by Super and Overstreet (1960) in the Career Pattern Study. However, Crites has

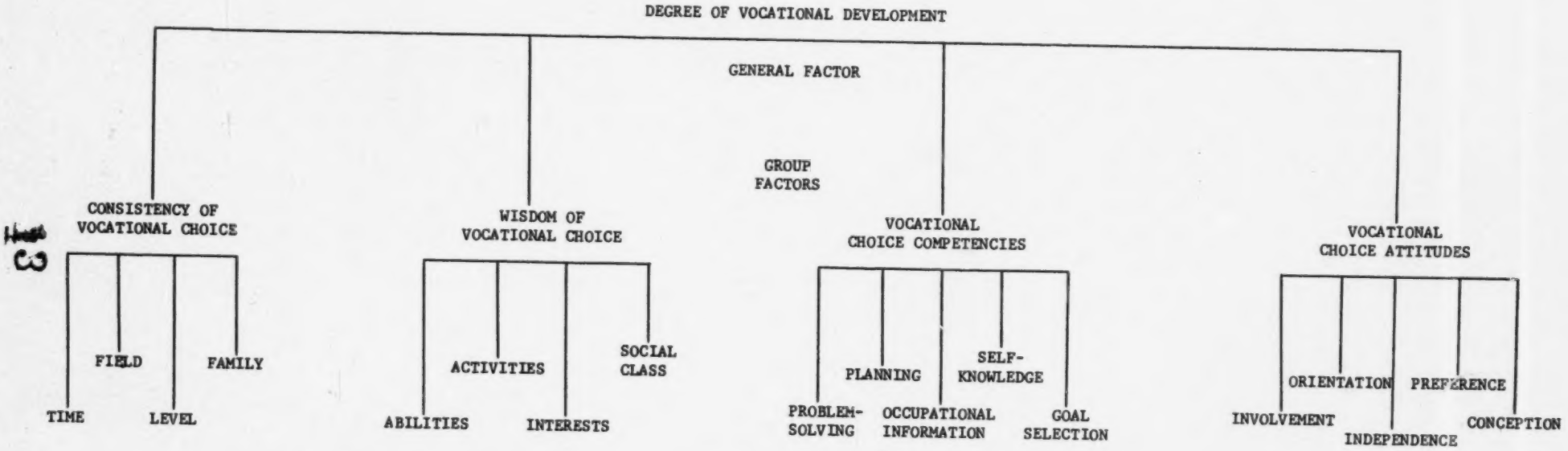

Figure 1. The Construct of Vocational Maturity as Derived from Theories of Vocational Development.*

*Source: Crites, J. O. "Measurement of Vocational Maturity in Adolescence: I - Attitudes Test of the Vocational Development Inventory," Psychological Monographs, 1965.

elaborated upon their formulation by proposing that the "Orientation to Vocational Choice," "Information and Planning," and certain aspects of the "Crystallization of Traits" dimensions be further analyzed into several different kinds of choice "competencies" and "attitudes." Choice competencies refer to cognitive processes such as vocational Problem-solving, Planning, Occupational information, Self-knowledge, and Goal selection. Choice attitudes are considered to fall within the affective domain; they include Involvement in the choice process, Orientation toward work, Independence in decision-making, Preference for choice factors, and Conception of the choice process. These choice competencies and attitudes, together with the "Consistency of Vocational Choice" and "Wisdom of Vocational Choice" dimensions, are considered by Crites (1965) to represent the construct of vocational maturity as depicted in Figure 1. The model represents a refinement of the organization and classification of vocational maturity variables, and it serves as a useful guide for studying the relationships between variables and dimensions. Nevertheless, the researcher who attempts to test the model must formulate conceptually adequate definitions before embarking upon the task of writing items to measure the variables incorporated in the model.

Methods of Data Collection

A second major problem in validating the construct of vocational maturity is the choice of the methods of data collection. At least three different data-collection methods have been used in previous attempts to validate the construct of vocational maturity: the partially structured interview, the structured interview, and fixed-alternative questions. The advantages and disadvantages of each of these are discussed here.

The partially structured interview was used in Super's Career Pattern Study, a 20-year longitudinal investigation of the vocational development of a sample of males between the ages of 15 and 35 (Super, et al., 1957). In the partially structured interview, neither the exact questions the interviewer asks nor the responses the subject makes are predetermined. The structure is very broad at first, consisting only of setting general topics which are narrowed by the use of primer questions as the interview proceeds. Such interviews enable the investigator to study intensively the vocational maturity variables under consideration. Furthermore, the flexibility of this type of interview makes it possible to elicit responses in greater depth than is possible with standardized tests and inventories. The partially structured interviews can be a useful source of hypotheses that can later be submitted to a systematic test; however, they have a major disadvantage in that the results are frequently not comparable from interview to interview. In addition, the complexity of analysis usually makes them less efficient than structured interviews.

The structured interview was used in the Career Development Study (Gribbons and Lohnes, 1968) to measure Readiness for Vocational Planning. Although the structured interview does not suggest any structure for the respondent's reply, both the questions themselves and the order in which they are presented are predetermined. Since all respondents are replying to the same set of questions, the responses obtained from one interview to another are comparable. Nevertheless, the unstructured responses are difficult and expensive to analyze since scoring manuals must be constructed, coders must be trained, and responses must be scored

before they can be tabulated and statistically analyzed. Compared to the simple process of scoring fixed-alternative questions, the analysis of open-ended questions is quite complex and often troublesome.

The fixed-alternative procedure was used by Crites (1965) in constructing the Vocational Development Inventory Attitudes test. Since the responses of the subject are limited to stated alternatives, the questions are not only simple to administer but also quick and relatively inexpensive to analyze. Inasmuch as the fixed-alternative procedure eliminates error variance attributable to scorer differences in evaluating responses, reliability estimates are likely to be higher than those obtained from structured or partially structured interview guides.

Item Selection Procedures

A third major problem in validating the construct of vocational maturity deals with item selection procedures. The item selection procedures employed by Crites to develop the Attitude Scale practically eliminate its use in studies of the developmental nature of vocational maturity. It has been our belief that vocational maturity is developmental; therefore, scores attained on vocational maturity measures should increase across grade levels. To test this hypothesis, Crites (1965) administered the Attitude Scale to pupils in grades five through 12. However, by accepting for inclusion in his instrument only those items which "were monotonically associated with age and grade," Crites was able to conclude that scores on the Attitude Scale are "monotonically related to both age and grade," and that "there was an increase in vocational maturity at all grade levels except the eleventh grade, which was atypical" (Crites, 1965, p. 32). Obviously, the item analysis data

provided Crites with the opportunity to select items which would determine whether the hypothesis would eventually be accepted or rejected. Clearly, constructors of new tests will need to extricate themselves by making different item-inclusion decisions.

Validation by Internal Evidence

This section deals with the validation of the construct of vocational maturity by means of evidence generated by measures designed for the variables included in Crites' model of the construct of vocational maturity (Crites, 1965). The model is organized according to four dimensions: Consistency of Vocational Choice, Wisdom of Vocational Choice, Vocational Choice Competencies, and Vocational Choice Attitudes. Each dimension is divided into variables: Consistency of Vocational Choice is sub-divided into Time, Field, Level, and Family; Wisdom of Vocational Choice is sub-divided into Abilities, Activities, Interests, and Social class; Vocational Choice Competencies consists of Problem-solving, Planning, Occupational information, Self-knowledge, and Goal selection; and Vocational Choice Attitudes includes Involvement, Orientation, Independence, Preference, and Conception. For the sake of discussion, it will be assumed that measures are available for each of the 18 variables included in the model. Two of the assumptions on which Crites' model was developed are that vocational maturity is a multidimensional construct--Consistency of Vocational Choice, Wisdom of Vocational Choice, Vocational Choice Competencies, and Vocational Choice Attitudes--and that each dimension includes several variables which have more in common with each other than with variables classified under other dimensions. On the

basis of this assumed multidimensional characteristic of the construct of vocational maturity, one might cast several hypotheses about relationships among the 18 variables and four dimensions.

First, for any given sub-test under Vocational Choice Competencies, performance on it should be more highly related to sub-tests which are classified under the same dimension than to Involvement which is classified under a different dimension (Vocational Choice Attitudes). The essence of this relationship can be demonstrated as follows: if Problem-solving and Planning are regarded as measures of a common process accounted for by the Vocational Choice Competencies dimension, and if Involvement is regarded as a measure of a different process accounted for by the Vocational Choice Attitudes dimension, then it is apparent that variables classified under the same dimension will have a greater proportion of shared elements, and, by virtue of that, a higher correlation.

Second, the hypothesis might deal with the relationship between dimension scores and sub-test scores. For any given dimension, performance on it should be more highly related to sub-tests which are classified under it than to sub-tests classified under other dimensions. For example scores attained on the Vocational Choice Competencies dimension should be more highly related to Problem-solving, Planning, Occupational information, Self-knowledge, and Goal selection than to Involvement, Orientation, Independence, Preference, and Conception. This relationship is implied by the model and should hold for each of the four dimensions. In addition, the dimension scores should be moderately positively correlated with each other and with total vocational maturity scores (Crites, 1965).

Third, the hypothesis might deal with the factor pattern derived from a matrix of the intercorrelations of the 18 vocational maturity variables. The factor pattern should consist of a general factor and four group factors much as depicted in Table 2. Since each of the 18

Table 2. Hypothesized Factor Pattern

Variables*	F_1	F_2	F_3	F_4	F_5
Time	x	x			
Field	x	x			
Level	x	x			
Family	x	x			
Ability	x		x		
Activities	x		x		
Interests	x		x		
Social class	x		x		
Problem-solving	x			x	
Planning	x			x	
Occupational information	x			x	
Self-knowledge	x			x	
Goal selection	x			x	
Involvement	x				x
Orientation	x				x
Independence	x				x
Preference	x				x
Conception	x				x

*From Crites (1965).

vocational maturity variables contributes to the measurement of vocational maturity, each would be expected to load substantially on a general vocational maturity factor. In addition, the factor matrix should yield four group factors which correspond to the four dimensions of vocational maturity. Each group factor should be defined by those variables which comprise a particular dimension. For a given factor, the loadings should be higher for the set of variables which constitute one dimension than for the variables which are included in the other three dimensions.

Validation by External Evidence

The validation of vocational maturity measures by relating them to external criteria is an endless task, inasmuch as scores from them could be related to an almost infinite set of criterion measures. However, there are several such studies which might cast a revealing light on vocational maturity.

First, vocational maturity measures should be administered to random samples of students at various grade levels to determine if mean score on each variable increases monotonically with grade level of students. Since theories of vocational development propose that vocational behaviors mature with increasing age and grade during adolescence, measures of vocational maturity should yield scores which increase with grade. Discovery of a strong positive association would tend to support the claim that the vocational maturity behaviors are developmental ones. Of course, discovery of the relationship would in no

sense constitute a final judgment on that point; however, when coupled with other evidence, it should strengthen arguments about the construct validity of vocational maturity.

Second, other measures of vocational maturity should be related to the several scores produced by vocational maturity measures based upon Crites' (1965) model. It might be particularly valuable to devise a reference battery of tests from those that appear in Gribbons and Lohnes' (1968) Readiness for Vocational Planning scales and from those which have been constructed by Super and Overstreet (1960) for the purpose of determining how each of the sub-tests of Crites' model is correlated with them. Since the variables included in Crites' model are advanced as measures of vocational maturity, their correlations with other measures of vocational maturity will make it possible to determine, from the size of such correlations, whether generalizations established on the other measures can be expected to hold for the measures based on Crites' model. The information derived from these analyses would also be invaluable in conducting factorial studies to ascertain the psychological structure of vocational maturity.

Third, many more studies could be executed to test the specific hypotheses bearing on the construct validity of Crites' model of vocational maturity. The mental processes which occur in Problem-solving, Planning, and Goal selection in Crites' model are presumed to be independent of the processes which appear in general tests of intelligence. Studies relating general mental ability scores to vocational maturity sub-test scores might be conducted to determine whether the Problem-solving, Planning, and Goal selection sub-tests of Crites' model of

vocational maturity are more highly related to standard measures of problem-solving ability than are mental ability scores related to such measures.

Fourth, studies relating vocational decision-making ability scores to vocational maturity scores might be conducted to determine whether the relationship between decision-making ability and vocational maturity is substantially greater for those vocational maturity variables which appear to involve relatively complex processes (Problem-solving and Goal selection) than for those variables measuring simpler processes (Occupational information and Self-knowledge). An inventory such as the one developed by Dilley (1965) could be used to provide a measure of decision-making ability independent of the vocational maturity measures.

Additional studies could be carried out to examine whether simulated vocational planning ability is related to vocational maturity. For example, it might be worthwhile to determine the relationship between vocational maturity scores and scores on the Life Career Game (Boocock, 1968), a simulation game which requires the student to make decisions about jobs, further education or training, family life, and use of leisure.

None of these studies would yield conclusive evidence about the validity of vocational maturity measures, but they would add to the existing evidence which is slight at this time.

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